

CLAIMS

1. A method for treating a substance in cryogen comprising:
transporting said cryogen from a reservoir into a horizontal flow of said cryogen;
depositing a substance into said horizontal flow of said cryogen;
passing said substance and said cryogen into a raceway; and,
separating said substance from said cryogen.
2. A method according to claim 1 wherein said cryogen is transported from said reservoir by at least one auger.
3. A method according to claim 1 wherein said horizontal flow of said cryogen is adjusted by a control means.
4. A method according to claim 3 wherein said control means slows down the horizontal flow of said cryogen.
5. A method according to claim 3 wherein said control means reduces any back eddies and/or reverse currents.
6. A method according to claim 3 wherein said control means creates a generally smooth surface on said cryogen.
7. A method according to claim 3 wherein said control means is a dam.
8. A method according to claim 3 wherein said control means is a baffle.
9. A method according to claim 3 wherein said control means is a screen.
10. A method according to claim 1 wherein said cryogen is liquid nitrogen.

11. A method according to claim 1 wherein said substance is deposited into said horizontal flow of said cryogen by at least one nozzle.
12. A method according to claim 1 wherein said raceway is linear.
13. A method according to claim 1 wherein said raceway is cascading.
14. A method according to claim 1 wherein said raceway is a spiral.
15. A method according to claims 12, 13 or 14 wherein said raceway has a U-shaped cross-section.
16. A method according to claims 12, 13 or 14 wherein said raceway is a tube.
17. A method according to claim 1 wherein said raceway opens onto a conveyor belt.
18. A method according to claim 17 wherein said conveyor belt is a wire mesh.
19. A method according to claim 17 wherein said conveyor belt is a screen.
20. A method according to claim 18 or 19 wherein said cryogen that passes through said conveyor belt is passed back into said sump.
21. An apparatus for treating a substance in cryogen comprising:
 - a container;
 - a reservoir in said container, said reservoir filled with a cryogen;
 - a means for removing said cryogen from said reservoir;
 - a raceway for transporting said cryogen;
 - at least one nozzle for depositing a substance into said cryogen; and,
 - a conveyor belt for separating said cryogen from said substance.

22. An apparatus according to claim 21 wherein said cryogen is liquid nitrogen.
23. An apparatus according to claim 21 wherein said raceway is linear.
24. An apparatus according to claim 21 wherein said raceway is cascading.
25. An apparatus according to claim 21 wherein said raceway is a spiral.
26. An apparatus according to claims 23, 24 or 25 wherein said raceway has a U-shaped cross-section.
27. An apparatus according to claims 23, 24 or 25 wherein said raceway is a tube.
28. An apparatus according to claim 21 wherein said conveyor belt is a wire mesh.
29. An apparatus according to claim 21 wherein said conveyor belt is a screen.
30. A method for treating a substance in cryogen comprising:
- transporting said cryogen from a reservoir into a horizontal flow of said cryogen;
 - depositing a first unit of a substance into said horizontal flow of said cryogen at an entry point;
 - depositing a second unit of said substance into said horizontal flow of said cryogen at said entry point, wherein said first unit is past said entry point in said horizontal flow such that said second unit does not contact said first unit in said horizontal flow;
 - moving any heat transfer created by the introduction of said first unit and said second unit in said cryogen away from said entry point via said horizontal flow of said cryogen;
 - passing said substance and said cryogen into a raceway; and,
 - separating said substance from said cryogen.

31. A method according to claim 30 wherein said heat transfer results in gasification, said gasification moved away from said entry point via said horizontal flow of said cryogen.

32. A method for treating a substance in cryogen comprising:

- transporting said cryogen from a reservoir into a horizontal flow of said cryogen;
- depositing a first unit of a substance into said horizontal flow of said cryogen at an entry point;

- depositing a second unit of said substance into said horizontal flow of said cryogen at said entry point, wherein said first unit is past said entry point in said horizontal flow such that said second unit does not contact said first unit in said horizontal flow;

- moving any cavitation created by the introduction of said first unit and said second unit in said cryogen away from said entry point via said horizontal flow of said cryogen;

- passing said substance and said cryogen into a raceway; and,
- separating said substance from said cryogen.